

## REMARKS

The Examiner is thanked for the performance of a thorough search.

Receipt of the Notice of Draftsperson's Patent Drawing Review is acknowledged. The Applicant proposes to submit formal drawings after completion of the examination process upon the issuance of a Notice of Allowance. The Applicant also proposes to submit a petition for color drawings pursuant to 37 CFR 1.84(a)(2) following the submission of this response.

By this amendment, Claims 5 and 12 have been amended. No Claims have been cancelled. Claims 16-20 have been added. Hence, Claims 1- 20 are pending in the application.

## SUMMARY OF THE REJECTIONS

Claims 1-5, 7-13 and 15 have been rejected under 35 U.S.C. § 103(a), as unpatentable over U.S. Patent No. 5,956,043 issued to Jensen ("*Jensen*"). Claims 6 and 14 have been rejected under 35 U.S.C. § 103(a) as unpatentable over *Jensen* as applied to claims 1 and 8 and further in view of U.S. Patent No. 5,226,175 issued to Deutsch et al. ("*Deutsch*"). The rejections are respectfully traversed.

## RESPONSE TO REJECTIONS

### Claims 1, 8, and 15

It is respectfully submitted that *Jensen* does not disclose the invention as claimed. *Jensen* is concerned with a method for creating rotated texture tiles that can be arranged in a seamless **periodic** pattern. Specifically, *Jensen* teaches taking a small, unrotated tile, then reproducing it to create a larger supertile, then rotating that supertile using one or two periods, and finally

defining a new small, rotated tile that can provide a specified degree of seamless tiling when repeated in a **periodic** pattern. (*Jensen*, Col. 2, lines 12-19). Note that the new rotated tile that is created contains the same pattern as the original, except that the pattern or texture is rotated. (*Jensen*, col. 7, lines 13-17). The method of *Jensen* addresses the problem of being able to see the seams of rotated tiles when they are repeated in a periodic pattern, as shown in Figure 9 of *Jensen*. (*Jensen*, col. 2, lines 57-63).

In contrast to *Jensen*, Claims 1, 8, and 15 require ***aperiodic*** tiling patterns. As discussed on pages 10 and 11 in the present application, aperiodic tiling patterns inherently lack translational symmetry and therefore can be used to cover a target area without forming a linear repetition of the tiling pattern. The method of *Jensen* will still leave linear repetitions that can be readily apparent to an observer. In contrast, the aperiodic tiling approach recited in Claims 1, 8, and 15 advantageously provides for tiling a target area with a texture image, such as that shown in Figure 5 of the present application, without creating the type of linear repetitions (e.g., discernable sub-patterns) evident in Figure 2B of the present application.

Please also note that *Jensen* does not address the problem of removing linear repetitions among the tiles themselves, such as can be observed in Figure 2A of the present application. By arranging the tiles in an aperiodic manner as required by the claims of the present application (not the periodic manner of *Jensen*), those linear repetitions of the tiles are no longer observable, as can be seen in Figure 5 of the present application.

The Office Action states that *Jensen* discloses “covering a target area in an aperiodic tiling pattern (col. 6, ll. 6, ll. 37-46; col. 7, ll. 4-15).” However, the portion of *Jensen* cited describes a tiling pattern that is ***periodic*** instead of ***aperiodic*** (e.g., not periodic; irregular; without periodicity). For example, *Jensen* states: “A supertile ... may be readily produced by

stamping out repeated adjacent copies of the tile” (Col. 6, lines 38-42). The placement of repeated adjacent copies of a pattern to produce a new pattern produces a linear repetition, and thus the new pattern is periodic. Further, any pattern with linear repetition will remain periodic (e.g. containing linear repetition), irrespective of how the pattern is rotated.

While *Jensen* discloses “a period”, this does not relate to the aperiodic tiling patterns required by the claims of the present application. In *Jensen*, a “period” refers to the distance along the specified X- or Y-axis after which the portion of the supertile begins to repeat. (Col. 6, lines 59-64). This indicates that *Jensen* is making periodic tiling patterns, not aperiodic patterns. *Jensen* does not disclose, teach or suggest the use of aperiodic tiling patterns for covering a target area.

Claim 1 features:

“A method for performing textured mapping of a target area, the method comprising the steps of:  
receiving input that defines a texture image; and  
**covering the target area in an aperiodic tiling pattern with tiles generated from said texture image.”**

Because *Jensen* fails to describe, teach, or suggest covering a target area in an aperiodic tiling pattern with tiles generated from a texture image, it is respectfully submitted that, for at least the reasons stated above, Claim 1 is allowable over the art of record and is in condition for allowance.

Claims 8 and 15 contain features that are similar to those described above with respect to Claim 1, and in particular both require “an aperiodic tiling pattern...” Therefore, based on at

least the reasons stated above, it is respectfully submitted that Claims 8 and 15 are allowable over the art of record and are in condition for allowance.

Claims 2-7 and 9-14

Claims 2-7 and 9-14 are dependent upon Claims 1 and 8, respectively, and thus include each and every feature of the corresponding independent claims. Therefore, it is respectfully submitted that Claims 2-7 and 9-14 are allowable for the reasons given above with respect to Claims 1 and 8.

In addition, regarding Claims 3 and 10, the Office Action states that *Jensen* discloses “selecting an aperiodic tiling pattern (col. 6, ll. 40-46; col. 7, ll. 33-34).” Also, regarding Claims 4 and 11, the Office Action states that *Jensen* discloses “mapping tiles to the aperiodic tiles (col. 6, ll. 37-51).” Finally, regarding Claims 5 and 12, the Office Action states that *Jensen* discloses a “tiling associated with tiles based on the aperiodic tiling pattern (col. 6-7, ll. 59-9).” However, the portions of *Jensen* cited describe a tiling pattern that is *periodic*, not *aperiodic*. For example, *Jensen* states that “the user may wish to stamp out a single row (or column) of long narrow tiles...” which indicates a periodic pattern, not an aperiodic pattern. (Col. 6, lines 32-34). Similarly, *Jensen* also states the tile “may be readily produced by stamping out repeated adjacent copies...” (Col. 6, lines 41-42). This also indicates a periodic tiling pattern instead of the aperiodic tiling pattern as in the claimed invention. Finally, *Jensen* discusses the repetition of the tile after the X-period for the X-axis and, if desired, after the Y-period for the Y-axis. This again indicates a periodic instead of an aperiodic tiling pattern. Therefore, *Jensen* only discusses periodic tiling patterns. There is nothing in either the cited passages from the Office Action or any other part of *Jensen* that describes, teaches, or suggests an aperiodic tiling system.

In addition, the remaining claims recite one or more additional features that independently render the claims patentable over the art of record. For example, Claim 3 recites that:

“the step of covering the target area includes the steps of:  
selecting an aperiodic tiling pattern;  
generating a set of textured tiles based on said aperiodic tiling pattern; and  
applying the textured tiles to the target area.”

This feature is not described, taught, or suggested by *Jensen*.

Additionally, Claim 4 recites that:

“the step of applying the textured aperiodic tiles to the target area includes the steps of:  
covering the target area with one or more aperiodic tiles, wherein the one or more  
aperiodic tiles are based on the aperiodic tiling pattern; and  
mapping a corresponding textured tile to each of the one or more aperiodic tiles.”

This feature is also not described, taught, or suggested by *Jensen*.

Regarding the rejection of Claims 6 and 14 over *Jensen* in further view of *Deutsch*, the latter reference also lacks any mention or suggestion of aperiodic tiling. *Deutsch* is directed toward a technique for developing an analytical model of an image based upon a pixel map. (Col. 2, lines 24-26). In contrast, Claims 6 and 14 are directed toward the use of an aperiodic tiling approach, which advantageously eliminates linear repetitions. Furthermore, the “tiles” referred to in *Deutsch* are merely sub-areas of the larger pixel image (Col. 2, lines 39-41; Col. 6, lines 30-31) and are not repeated in an aperiodic pattern as required by Claims 6 and 14. Thus, *Jensen* and *Deutsch*, either taken separately or in combination, fail to disclose, teach, or suggest

the claimed invention. Accordingly, the Applicant respectfully submits that Claims 6 and 14 are allowable over the art of record and are in condition for allowance.

In view of the foregoing, the Applicant respectfully requests reconsideration and withdrawal of the rejections.

#### New Claims 16-20

Claims 16-20 have been added to the application and thus were not addressed in the Office Action. Claim 16 is a new Claim that is dependent upon Claim 15 and thus contains all of the features of that claim. Hence Claim 16 is allowable for the same reasons as Claim 15, discussed above. Claim 17 is a new independent claim that contains similar features to those described above with respect to Claims 1, 8, and 15, including the feature of “an aperiodic tiling pattern...” Therefore, based on at least the reasons stated above for Claims 1, 8, and 15, Claim 17 is allowable over the art of record. Finally, Claims 18-20 are new claims that are dependent upon Claim 17, and therefore contain each and every feature of Claim 17. Hence, Claims 18-20 are allowable for at least the same reasons as Claim 17. Accordingly, the Applicant respectfully submits that Claims 16-20 are allowable over the art of record and are in condition for allowance.

#### CONCLUSION

For at least the reasons set forth above, the Applicant respectfully submits that all of the pending claims are patentable over the cited art and are in condition for allowance. Therefore,

the issuance of a formal Notice of Allowance is believed next in order, and that action is most earnestly solicited.

The Examiner is respectfully requested to contact the undersigned by telephone if it is believed that such contact would further the examination of the present application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortages in fees due in connection with the filing of this paper, including extension of time fees, or credit any overages to Deposit Account No. 50-1302.

Respectfully submitted,

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**CERTIFICATE OF MAILING**

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on Sept. 21, 2000 by Jurisa LeAuster